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10/715,778

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Daniele Paolo David Piponi

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Warner Bros. Entertainment Inc.,  
Bldg. 156, Room 5158  
4000 Warner Boulevard  
Burbank, CA 91522

EXAMINER

LUU, CUONG V

ART UNIT

PAPER NUMBER

2128

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/715,778

Applicant(s)

DAVID PIPONI ET AL.

Examiner

Cuong V. Luu

Art Unit

2128

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-15, 17-20 is/are rejected.
- 7) ☒ Claim(s) 6 and 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 November 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 10/5/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

Claims 1-19 (1-20 according to the examiner as explained bellowed) are pending. Claims 1-19 (1-20 according to the examiner as explained bellowed) have been examined. Claims 1-19 (1-20 according to the examiner as explained bellowed) have been rejected.

### ***Claim Objections***

1. Claim 18 is objected to because of the following informalities: this claim seems to consist of 2 separate claims similar to claims 8 and 9. For the purpose of examining this claim, the examiner decides to change claim 18 to two separate claims as re-numbered to 18 and 20 as following:

18. The computer-readable media of claim 11, wherein the instructions further comprise calculating  $G(t)$  using  $P(t)$  as input to determine collision events between the articulated figure and other simulated objects, whereby impulse values for  $G(t)$  are determined.

20. The computer-readable media of claim 11, wherein the instructions further comprise performing the calculating step and the simulating step concurrently.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

**Claims 1-10 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.**

2. As per claim 1, the Examiner respectfully submits, under current PTO practice, that the claimed invention does not recite a tangible result and is merely drawn to a manipulation of abstract ideas. The claim is not tangible because the results of the final step of the method are not used in such a way to make them tangible such as displaying to users or storing for later usage.
3. Claims 2-10 inherit the defectives of claim 1.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1, 3-5, 7-11, 13-15, and 17-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Delp et al, hereinafter Delp, (A Computational Framework for Simulating and Analyzing Human and Animal Movement, September/October 2000).**

1. As per claim 1; Delp teaches a method for determining movements of an articulated figure for use in computer-generated animation, the method comprising:

accessing a pose sequence  $Q(t)$ , wherein  $Q(t)$  comprises position values associated with segments of an articulated figure at sequential times of the pose sequence (p. 50, col. 1 of this page, section Movement animation, paragraph 1 of the col.);

calculating an inverse-dynamics solution  $F(t)$ , wherein  $F(t)$  comprises calculated torque values for the segments during sequential forward-looking intervals  $\Delta t$ , such as would result in movements of the articulated figure corresponding to  $Q(t)$  (p. 48, col. 2 of this page, paragraph 1 of the col.; p. 49, col. 1 of this page, section Dynamics, paragraph 1 of this section; p. 50, col. 2, paragraph 4; p. 52, col. 1, section Dynamic simulation. In paragraph 1 of section Dynamics Delp teaches performing inverse dynamics simulation of movement, which is calculating an inverse-dynamics solution; for the 2 recited paragraphs, Delp teaches simulated movement consisting of rotations - rotation movement is due to torque, so this implies calculation of torque - and forward dynamic simulation. Therefore, the combination of calculating an inverse-dynamics solution, rotations and forward dynamic simulation reads on this limitation);

accessing force data  $G(t)$ , wherein  $G(t)$  comprises external force values for simulating a response of the articulated figure (p. 50, col. 1 of this page, section Movement animation, paragraph 1 of the col.); and

simulating a dynamic response of the articulated figure in reaction to a sum of  $F(t)$  and  $G(t)$ , thereby defining a simulated pose sequence  $P(t)$  (p. 50, col. 1 of this page, section Movement animation, paragraph 1 of the col.).

2. As per claim 3, Delp teaches scaling  $F(t)$  by a scale factor  $s$ , whereby the simulating step defines  $P(t)$  by a simulated dynamic response of the articulated figure in reaction to a sum of  $F(t)$  scaled by  $s$  and  $G(t)$  (p. 48, col. 2 of the page, paragraphs 3-4 of the col.).

3. As per claim 4, Delp teaches receiving user input defining a value of  $s$ , prior to the scaling step (p. 49, col. 1 of the page, section Graphical User Interface, paragraph 1 of this section).
4. As per claim 5, Delp teaches scaling  $F(t)$  by  $s$ , wherein  $s$  is less than one (p. 49, col. 1 of the page, paragraph 2 of the col.).
5. As per claim 7, Delp teaches scaling  $F(t)$  by  $s$ , wherein  $s$  comprises a time-dependent function (p. 49, col. 1, section Dynamics, paragraph 1 of the section. In this section Delp teaches users specifying timing and intensity of the muscle activations, which associate the scaling parameter. The timing and intensity here indicate that the scaling parameters are time-dependent functions).
6. As per claim 8, Delp teaches calculating  $G(t)$  using  $P(t)$  as input to determine collision events between the articulated figure and other simulated objects, whereby impulse values for  $G(t)$  are determined (p. 52, Figure 6. This figure and its description indicate calculating force data  $G(t)$  using simulated pose sequence of a bicycle rider for the collision events between the articulated figure, in this case legs and feet, with other simulated objects, in this case pedals of a bicycle).
7. As per claim 9, Delp teaches the calculating step and the simulating step are performed concurrently (p. 49, col. 1, section Dynamics, paragraph 1 of the section; p. 50, cols. 1-2 of the page, section Movement animation, paragraph 1 of the section. The teaching of inverse

dynamic simulation and real time simulation in these paragraphs indicates that the calculating step and simulating step are performed concurrently).

8. As per claim 10, Delp teaches the simulating step is performed after the calculating step has completed by defining  $F(t)$  over an animation sequence (p. 52, col. 2, section Dynamic simulation, paragraph 2 of the section. In this paragraph, Delp teaches "the timing and magnitude of the muscle actions were determined to optimally reproduce the mechanics of experimentally studied bicycle riders". The determination of muscle activations is the calculating step, and according to the teaching, this calculation is done before reproduce the mechanics of experimentally studied bicycle riders or equivalently simulating the animation sequence).
9. As per claim 11, Delp teaches a computer-readable media encoded with instructions for determining movements of an articulated figure for use in computer-generated animation, the instructions (Delp's teaching of using software to perform these steps below, which have already been discussed in claim 1, implies that a computer, which inherits a computer-readable media encoded with instructions, is used) comprising:
  - accessing a pose sequence  $Q(t)$ , wherein  $Q(t)$  comprises position values associated with segments of an articulated figure at sequential times of the pose sequence;
  - calculating an inverse-dynamics solution  $F(t)$ , wherein  $F(t)$  comprises calculated torque values for the segments during sequential forward-looking intervals  $\Delta t$ , such as would result in movements of the articulated figure corresponding to  $Q(t)$ ;
  - accessing force data  $G(t)$ , wherein  $G(t)$  comprises external force values for simulating a response of the articulated figure; and

providing a sum of  $F(t)$  and  $G(t)$  suitable for input in simulating a dynamic response of the articulated figure using a forward-dynamics motion simulation to determine a simulated pose sequence  $P(t)$ .

10. As per claim 13, these limitations have already been discussed in claim 3. They are, therefore, rejected for the same reasons.

11. As per claim 14, these limitations have already been discussed in claim 4. They are, therefore, rejected for the same reasons.

12. As per claim 15, these limitations have already been discussed in claim 5. They are, therefore, rejected for the same reasons.

13. As per claim 17, these limitations have already been discussed in claim 7. They are, therefore, rejected for the same reasons.

14. As per claim 18, these limitations have already been discussed in claim 8. They are, therefore, rejected for the same reasons.

15. As per claim 19, these limitations have already been discussed in claim 10. They are, therefore, rejected for the same reasons.

16. As per claim 20, these limitations have already been discussed in claim 9. They are, therefore, rejected for the same reasons.



***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claims 2 and 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Delp.**

17. As per claim 2, it would have been obvious to one of ordinary skill in the art to develop software to be able to set  $\Delta t$  equal to a user-determinable value, prior to the calculating step. The capability to set  $\Delta t$  equal to a user-determinable value would have allowed user to simulate only motion of the interested time interval.

18. As per claim 12, these limitations have already been discussed in claim 2. They are, therefore, rejected for the same reasons.

### ***Allowable Subject Matter***

**Claims 6 and 16 are objected to as being dependent upon rejected base claims 3 and 13, respectively, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.**

The following is a statement of reasons for the indication of allowable subject matter:

19. As per claim 6, the prior arts teach the scaling step further comprises scaling  $F(t)$  by  $s$ , but not wherein  $s$  is greater than one.

20. As per claim 16, the prior arts teach wherein the instructions further comprise scaling  $F(t)$  by  $s$ , but not wherein  $s$  is greater than one.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cuong V. Luu whose telephone number is 571-272-8572. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah, can be reached on 571-272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. An inquiry of a


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general nature or relating to the status of this application should be directed to the TC2100

Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CVL

  
THAI PHAN  
PRIMARY EXAMINER  
TECHNOLOGY CENTER 2100